

ABSTRACT OF THE DISCLOSURE

A sensing element, a method of making a sensing element, and a fiber optic sensor incorporating the sensing element are described. The sensor can be used for the quantitative detection of NO₂ in a mixture of gases. The sensing element can be
5 made by incorporating a diazotizing reagent which reacts with nitrous ions to produce a diazo compound and a coupling reagent which couples with the diazo compound to produce an azo dye into a sol and allowing the sol to form an optically transparent gel. The sensing element changes color in the presence of NO₂ gas. The temporal response of the absorption spectrum at various NO₂ concentrations has
10 also been recorded and analyzed. Sensors having different design configurations are described. The sensing element can detect NO₂ gas at levels of parts per billion.